

IN THE CLAIMS:

Please CANCEL claims 4, 9-12, 16 and 26-33 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 1, 5 and 15, and ADD new claims 34-36, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1. (Currently Amended) A laser oscillation apparatus comprising:

wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target value;

calculation means for calculating a drift amount of the oscillation wavelength generated immediately after oscillation starts; and

a controller for ~~driving the wavelength selection element by said wavelength change means on the basis of the calculated drift amount~~ determining whether a difference between the oscillation wavelength and the target value exceeds a predetermined value,

wherein, when the difference does not exceed the predetermined value, said controller controls said wavelength change means on the basis of the calculated drift amount so as to have the oscillation wavelength be the target value, and causes said wavelength change means to oscillate the laser beam without emitting a test laser beam to output the laser beam externally of the apparatus.

2. (Cancelled)

3. (Previously Presented) The apparatus according to claim 1, wherein said calculation means calculates the drift amount on the basis of at least one of an oscillation wavelength change amount of the laser beam, an oscillation idle time of the laser beam, and an oscillation duty.

4. (Cancelled)

5. (Original) The apparatus according to claim 4, ~~wherein 1, further comprising~~ a shutter ~~is closed when the oscillation wavelength change amount of the laser beam or the oscillation idle time of the laser beam~~, wherein said controller closes the shutter when the difference exceeds the threshold predetermined value.

6. (Original) The apparatus according to claim 1, further comprising wavelength measurement means for measuring the oscillation wavelength of the laser beam.

7. (Original) The apparatus according to claim 6, wherein
the apparatus further comprises internal environment measurement means for
measuring an internal environment of said wavelength measurement means, and
said wavelength measurement means is corrected based on the measured internal
environment of said wavelength measurement means.

8. (Previously Presented) The apparatus according to claim 7, wherein the internal environment of said wavelength measurement means includes at least one of a temperature and an atmospheric pressure.

9-12. (Cancelled)

13. (Previously Presented) The apparatus according to claim 1, wherein the wavelength selection element includes one of a grating and an etalon.

14. (Original) The apparatus according to claim 1, wherein the laser beam includes an excimer laser beam.

15. (Currently Amended) An exposure apparatus using a laser oscillation apparatus as a light source, wherein the laser oscillation apparatus comprises:

wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target value;

calculation means for calculating a drift amount of the oscillation wavelength generated immediately after oscillation starts; and

a controller for ~~driving the wavelength selection element by said wavelength change means on the basis of the calculated drift amount~~ determining whether a difference between the oscillation wavelength and the target value exceeds a predetermined value,

wherein, when the difference does not exceed the predetermined value, said controller controls said wavelength change means on the basis of the calculated drift amount so as to have the oscillation wavelength be the target value, and causes said laser oscillation apparatus to oscillate the laser beam for exposing the substrate without emitting a test laser beam.

16. (Cancelled)

17. (Withdrawn) A semiconductor device manufacturing method of manufacturing a semiconductor device by using an exposure apparatus, said method comprising the steps of:

applying a resist to a substrate;

drawing a pattern on the substrate by using the exposure apparatus; and

developing the substrate,

wherein the exposure apparatus uses as a light source a laser oscillation apparatus

including:

wavelength change means for driving a wavelength selection element and

changing an oscillation wavelength of a laser beam to a target value; and

calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount and the calculated drift amount.

18. (Withdrawn) A semiconductor device manufacturing method comprising the steps of:

- installing manufacturing apparatuses for performing various processes, including an exposure apparatus, in a semiconductor manufacturing factory; and
- manufacturing a semiconductor device by using the manufacturing apparatuses in a plurality of processes,

wherein the exposure apparatus uses as a light source a laser oscillation apparatus including:

- wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target value, and
- calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount and the calculated drift amount.

19. (Withdrawn) The method according to claim 18, further comprising the steps of:

- connecting the manufacturing apparatuses by a local area network; and
- communicating information about at least one of the manufacturing apparatuses between the local area network and an external network outside the semiconductor manufacturing factory.

20. (Withdrawn) The method according to claim 19, further comprising performing one of (i) accessing a database provided by a vendor or user of the exposure apparatus via the external network to obtain maintenance information of the manufacturing apparatus by data communication, and (ii) performing production management by data communication between the semiconductor manufacturing factory and another semiconductor factory via the external network.

21. (Withdrawn) A semiconductor manufacturing factory comprising:

- manufacturing apparatuses, including an exposure apparatus, for performing various processes;
- a local area network for connecting said manufacturing apparatuses; and
- a gateway which allows the local area network to access an external network outside the factory,

wherein information about at least one of said manufacturing apparatuses can be communicated, and

said exposure apparatus uses as a light source a laser oscillation apparatus including:

- wavelength change means for driving a wavelength selection element and
- changing an oscillation wavelength of a laser beam to a target value, and

calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount and the calculated drift amount.

22. (Withdrawn) A maintenance method for an exposure apparatus installed in a semiconductor manufacturing factory, said method comprising the steps of:

causing a vendor or user of the exposure apparatus to provide a maintenance database connected to an external network of the semiconductor manufacturing factory;

authorizing access from the semiconductor manufacturing factory to the maintenance database via the external network; and

transmitting maintenance information accumulated in the maintenance database to the semiconductor manufacturing factory via the external network,

wherein the exposure apparatus uses as a light source a laser oscillation apparatus including:

wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target value, and

calculation means for calculating a driving amount of the wavelength selection element on the basis of the target value, and a drift amount of the oscillation wavelength generated immediately after oscillation starts,

wherein said wavelength change means drives the wavelength selection element on the basis of the calculated driving amount and the calculated drift amount.

23. (Previously Presented) The apparatus according to claim 15, wherein the exposure apparatus further comprises a display, a network interface, and a computer network for executing network software, and maintenance information of the exposure apparatus can be communicated via the computer network.

24. (Previously Presented) The apparatus according to claim 23, wherein the network software is connected to an external network of a factory where the exposure apparatus is installed, provides on said display a user interface for accessing a maintenance database provided by a vendor or user of the exposure apparatus, and enables obtaining information from the database via the external network.

25. (Previously Presented) The apparatus according to claim 1, further comprising calculation means for calculating a drive amount of the wavelength section element on the basis of the target value,

wherein said controller drives the wavelength selection element by said wavelength change means on the basis of the calculated driving amount and the calculated drift amount.

26-33. (Cancelled)

34. (New) A laser oscillation apparatus comprising:

wavelength change means for driving a wavelength selection element and

changing an oscillation wavelength of a laser beam to a target value;

calculation means for calculating a drift amount of the oscillation wavelength generated immediately after oscillation starts; and

a controller for determining whether an idle time for stopping an oscillation exceeds a predetermined value,

wherein, when the idle time does not exceed the predetermined value, said controller controls said wavelength change means on the basis of the calculated drift amount so as to have the oscillation wavelength be the target value, and causes said wavelength change means to oscillate the laser beam without emitting a test laser beam to output the laser beam externally of the apparatus.

35. (New) The apparatus according to claim 34, further comprising a shutter, wherein said controller closes the shutter when the idle time exceeds the predetermined value.

36. (New) An exposure apparatus using a laser oscillation apparatus as a light source, wherein the laser oscillation apparatus comprises:

wavelength change means for driving a wavelength selection element and changing an oscillation wavelength of a laser beam to a target value;

calculation means for calculating a drift amount of the oscillation wavelength generated immediately after oscillation starts; and

a controller for determining whether an idle time for stopping an oscillation exceeds a predetermined value,

wherein, when the idle time does not exceed the predetermined value, said controller controls said wavelength change means on the basis of the calculated drift amount so as to have the oscillation wavelength be the target value, and causes said laser oscillation apparatus to oscillate the laser beam for exposing the substrate without emitting a test laser beam.